

# Memorandum

MIAMI-DADE  
COUNTY

**Date:** April 5, 2005

Agenda Item No. 12(B)2

**To:** Honorable Chairman Joe A. Martinez and Members,  
Board of County Commissioners

**From:**   
George M. Burgess  
County Manager


**Subject:** Progress Report on Recommendations of the Miami-Dade County Flood Management Task Force

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Attached for your review is a progress report on the status of the recommendations of the Miami-Dade County Flood Management Task Force.

On October 19, 1999, in response to the severe flooding experienced in Miami-Dade County as a result of Hurricane Irene, the Board of County Commissioners created the Miami-Dade County Flood Management Task Force (Task Force), with requirements to provide an annual status report. A copy of the Resolution is attached. The Task Force was formed to investigate, study and analyze the current and projected flood management system, with emphasis on the performance of the system during Hurricane Irene and subsequent major rain events. The Task Force also recommends opportunities in the public and private sector to improve flood management, and to seek to minimize the kind of property damage and disruptions such as those caused by Irene and the No-Name storm of October 2000.

Attachment



Deputy County Manager

# **MIAMI-DADE COUNTY FLOOD MANAGEMENT TASK FORCE RECOMMENDATIONS**

**For the Year 2004**

## **Hurricane Irene Report Recommendations Progress to Date:**

1. **Proactive Approach to Flood Protection.** Preventing flood damage requires continuous vigilance, coordination among several levels of government and an accountable institutional framework. This is especially true in Miami-Dade County where municipal, County and regional facilities all must be operated in harmony for the system to work. The Task Force recommends:
  - a. The County staff should establish a flood control liaison with the South Florida Water Management District (the District) to monitor conditions within the canal system and notify the District when action is needed to lower flood risk in the County. If appropriate action is not taken, the County Manager should be notified.
  - b. At least once a month from June through October the flood control liaison for the County should participate in a conference call with the District and the US Army Corps of Engineers (the Corps) staff to assess the systems vulnerability to flooding and take discretionary actions to relieve any conditions that could make matters worse should a tropical storm or hurricane strike the area.
  - c. The Board of County Commissioners should direct the County staff to provide them with a semi-annual status report regarding the progress of implementation of the District Implementation Plan and the report of the Miami-Dade County Flood Management Task Force.

### **Update: Proactive Approach to Flood Protection.**

- The County's Department of Environmental Resources Management (DERM) continues to meet with staff from the South Florida Water Management District (District) and the Army Corps of Engineers (Corps) on a regular basis. Weekly teleconferences are conducted during the rainy season.
2. **Wet Season Procedures.** In order to ensure that flooding is minimized during a hurricane, tropical storm or similar high rainfall event, the system must be operated in an appropriate manner well in advance of the weather service's ability to predict a problem.

The coastal flood control structures are presently operated at the low wet season stages authorized by the Corps. Prolonged periods at wet season stages lower than those approved by the Corps could have a detrimental effect on the County's water supply. Therefore, it may

not be possible to lower seasonal water levels any further to minimize flood potential in eastern Miami-Dade County. Other structural responses to increase coastal outlet capacity are addressed later in this report.

Operation of the canals in the western sections of the County has become very controversial due to the conflict between the canals' original purpose of flood protection and the present emphasis on environmental protection. The operation of the District canals west of U.S. 1 controls water levels for the western areas of the County. Because of the proximity of the canal system to Everglades National Park and Florida Bay, water control operations have the potential to create a significant negative effect on the Park and Barnes Sound. Minimizing flood damage solely through the implementation of single focus flood control operational policies could produce negative impacts to the water supply and to sensitive ecosystems in the region, and would not be allowed under today's state and federal environmental protection laws. Therefore, making a proposal to lower seasonal water levels to minimize flood potential in the south Miami-Dade area without assessing other impacts is unrealistic. Nevertheless, because of the essential role of the canal system in reducing flood damage, the Task Force recommends the following approach:

- a. During the hurricane season, canal water levels should be held at the lowest feasible authorized level in areas which depend on groundwater storage control and the District canals for primary flood protection.
- b. When conditions do not permit the lowest feasible level to be attained under the authorized operations schedule, then exceptions to authorized operations schedules should be actively sought to decrease the potential for flooding. The procedures outlined in the U.S. Army Corps of Engineer's Master Water Control Manual (7-11) provide the requirements for obtaining deviations and operation schedules.

**Update: Wet Season Procedures.**

- As stated above, meetings between DERM, the District and the Corps are ongoing to resolve the management of canal water levels.
  - Pre-storm levels have been set at the low wet seasonal stages for any storm with the potential of affecting south Florida, including forecasting for 4" of rainfall or greater. The Corps has revised the operating schedule for the C-4 Canal, to add flexibility in advance of major rain events. A request to initiate drawdown procedures 72 hours in advance has been approved and implemented.
3. **Flood Control Pumping to the East.** The most populated areas in Miami-Dade County are dependent on gravity driven spillway structures for the primary flood control. Since land elevations are so low, the tidal cycles influence how much flow can be removed in the critical hours after a heavy rain. The County has little or no flood control capacity during high tides. This results in sanitary sewer overflows bypassing drainage systems in the urban

areas, which result in additional pollution of Biscayne Bay. The County and Water Managers should develop a forward pumping design for the County's coastal canals that will ensure that some flow is maintained during high tide. This should not result in an increase in the water quantity flowing to the Bay but could significantly improve the water quality by reducing sanitary sewer overflows and maximizing the use of drainage system treatment processes. Water quality should be an integral part of the planning process, as well as a determination of how forward pumping will affect Biscayne Bay. The Miami-Dade County Flood Management Task Force recommends:

- a. The County should work with the District to conduct a feasibility study to determine the effects of forward pumping from all canals in the County and work to implement feasible recommendations.

**Update: Flood Control Pumping to the East.**

- Construction of the forward pump at the C-4 Canal is complete, and is in operation. Operation criteria will consider tide elevations and stages of the S26 on the Miami Canal (C-6).
  - A forward pump for the C-6 Canal is also operational.
  - Both the District's Implementation Plan and the 2001-2002 Congressional Authorization will allow the District and Corps to evaluate further the feasibility of forward pumping for all canals in the County. The District continues to actively seek federal funds to construct forward pumps on the primary canal system.
4. **Back-pumping and New Structures for the Tamiami Canal.** It has long been recognized that additional flood control capacity was required in the western portions of the County from Kendall Drive to Okeechobee Road, in order to provide those areas with a level of flood protection comparable to that enjoyed in the eastern area of the County. At the inception of the Central & South Florida Project (C & S F Project), back-pumping excess stormwater from these areas to the Water Conservation Areas was a key feature proposed in association with the anticipated westward urbanization of the County. However, it has been recognized for some time that poor water quality, which might be associated with urban stormwater, now precludes the original back-pumping concept. The County has convinced the Corps that additional structures in the Tamiami Canal west of Sweetwater should be considered critical projects as defined by congress in the 1996 Water Resource Development Act. The western-most structure will be constructed soon, and if operated properly, could provide some reduction in flooding during major storms.

The second Tamiami Canal structure, to be located roughly at 117<sup>th</sup> Avenue, proposed as a Critical Project, was incorporated in the Comprehensive Everglades Restoration Plan (CERP). While this structure could provide significant water supply benefits, it is likely to have a mixed impact on flooding. While the diversion of western Tamiami Canal flow to the

Snapper Creek Canal would reduce impacts to the communities of Sweetwater and West Miami, conveyance limitations in the C-2 and western C-4 canals would be expected to increase the potential of flooding in the Kendall area. Therefore, the Task Force recommends the following:

- a. The County should request the immediate implementation of the Corps' critical project in the C-4 Canal (Tamiami) at theoretical N.W. 157<sup>th</sup> Avenue. Operational rules should be developed which maximize the flood control use of the structure.
- b. Other back-pumping alternatives should be considered, including back-pumping into proposed detention area in the lakebelt and Bird Drive Basin.
- c. It is not advisable to construct the proposed 117<sup>th</sup> Avenue structure until the back-pumping facilities for the Tamiami Canal are in place and an evaluation has been conducted by the Corps to verify that flood protection will be enhanced.

**Update: Back-Pumping and New Structures for the Tamiami Canal.**

- Construction of the S-380 Structure is complete, and the District took possession of the structure in July 2003. Operational criteria for the structure have been set.
  - As part of ongoing CERP elements, all affected agencies are in the process of evaluation of back pumping to the Everglades.
  - As part of FEMA-funded hazard mitigation projects, the District is constructing an emergency impoundment area located in western Miami-Dade County. During major rain events the C-4 will be diverted into the impoundment area to create capacity, with seepage management included as a benefit.
5. **Miami-Dade County Stormwater Management Master Plan.** The County is presently engaged in the development of a Countywide Stormwater Management Master Plan (SMMP). The County was divided into four major planning areas for this effort as follows:
1. Northern Basins (C-7, C-8, C-9 West and C-9 East)
  2. Southern Basins (C-1, C-102 with Goulds Canal, C-103, North Canal and Florida City Canal)
  3. Central Basins (C-2 and C-100)
  4. North Central Basins (C-3, C-4, C-5 and C-6)

The Northern Basins' SMMP was completed in September 1997. The Southern Basins are presently being developed and are projected for completion in February 2002. The Central Basins and the North Central Basins are programmed to be completed by 2007.

The SMMP efforts in the Northern Basins (C-9 East and C-9 West, C-8 and C-7) determined that the main issues with regard to improved flood protection could be addressed by the construction of the following projects:

- Approximately eighteen (18) miles of berms would need to be constructed on both sides of the primary and secondary canal systems in the C-9 East Basin.
- The improvement of the 199<sup>th</sup> Street Culvert to enhance water deliveries to the primary canal system (Snake Creek), C-9 East Basin, presently under bid.
- Retrofitting of undersized culverts for improved water flow. Basin C-7 showed the most impacts due to flooding of the other basins. Specifically the Red Road Canal areas were impacted, due to the inefficient capacities of all the culverts south of the Little River Canal that serves the C-7 Basin.
- The Twin Lakes, part of the C-7 Basin, are to be interconnected to improve the overall storage needs of the area during excessive storm events. Bidding is ongoing.
- It was found that of the four basins initially modeled that the C-8 Basin showed the least significant flooding problems.
- Canal capacity should be improved by dredging accumulated silt. The Miami-Dade Public Works Department (PWD) has provide a list of known areas where dredging is recommended and the Department of Environmental Resources Management is programming the surveying of these locations to determine the extent of the work needed.

As additional Basins' SMMP are completed, similar control measures will be identified and recommended for Commission action. The Task Force recommends that:

- a. The County should complete its SMMP by 2002 with five-year review and updates.
- b. The County should expedite its ongoing development and identification of control measures for implementation as determined by the SMMP in the remaining basins.
- c. The SMMP's modeling efforts should be expedited in the central and north central areas of the County to identify appropriate control measures much like those mentioned above for the northern areas, to ensure that the flood protection needs for those areas of the County are addressed.
- d. The County should produce an official map of the primary and secondary canal systems for the entire County, including private and publicly-owned canals.

**Update: Miami-Dade County Stormwater Management Master Plan.**

- DERM remains dedicated to completing the Master Plan. Five Professional Service Agreements have been executed, and work is ongoing with private contractors to expedite the process.
  - DERM is committed to regular review and update of the Master Plan process every five years.
  - Miami-Dade County's Water Control Plan serves as the official map defining primary, secondary and private canals in the County. Meetings with the District have occurred to ensure consensus with the Plan.
- 6. Experimental Water Deliveries to Everglades National Park.** For 17 years, water management operations in the southwest Miami-Dade County region have been governed by criteria developed as part of the federally authorized program of "Experimental Water Deliveries to Everglades National Park (ENP)." Many believe that water levels and structure operations for the last five years under the program have exceeded the safe limit with respect to flood protection in the urban/agricultural areas of southwest Miami-Dade County. As a result of an emergency declared to protect the Cape Sable Seaside Sparrow, the Experimental Water Delivery Program has been discontinued and it is unlikely it will be reactivated in its previous form. The most recent four years under the experimental program have not been documented even though the program required that the agencies complete annual evaluations. These evaluations could produce valuable information to guide future operations in the area so unintended flooding could be avoided. The Miami-Dade County Flood Management Task Force recommends:
- a. The District and the Corps should prepare a final comprehensive report, covering the period from November 1, 1995 to December 31, 1999. This report would make definitive hydrologic conclusions about the impact of the canal operations and provide guidance for future actions.
  - b. The evidence presented indicates that the water levels associated with the Experimental Water Deliveries to the ENP contributed to the flood during Hurricane Irene in southwest Miami-Dade County. Therefore, the County should recommend to the Corps that the water level conditions which existed during the wet season of 1999 be avoided and that in addition to environmental objectives, flood protection to areas east of ENP be accommodated during future operations.

**Update: Experimental Water Deliveries to Everglades National Park.**

- The Corps' General Reevaluation Report and Supplemental Environmental Impact Statement was completed December 22, 2000.

- The County has offered comments to the Corps concerning wet season water levels, and the need for flood protection for urban residents and agricultural areas.
  - A revised Plan was presented to the District Governing Board on February 14, 2002. This Plan requested expedited construction of C-111, and recommended sustaining the existing level of flood protection.
  - The Interim Operating Plan (IOP) criteria are now in place and in use, and the Combined Structure Operating Plan (CSOP) criteria is now being developed. The County is actively participating in this process, and is also represented in the newly formed CSOP Advisory Team.
  - The Corps has agreed to conduct a General Re-Evaluation Study and Report of the entire primary canal system in Miami-Dade County. The County and the District will assist in providing data for this study.
7. **Modified Water Deliveries and C-111 Projects.** The Modified Water Delivery (MWD) and C-111 Canal projects have been designed and approved for the express purpose of resolving the conflict between protecting Everglades National Park and Florida Bay and providing residents and business with the flood protection that is essential. The County should actively participate in ongoing National Environmental Protection Act (NEPA) processes to define structural and operational changes that will both alleviate some flooding issues, as well as protect water supply and the natural environment. These modifications will reduce the inherent conflicts between the natural system and the developed areas. The MWD and C-111 projects enhance the natural system, especially in Everglades National Park, the Water Conservation Areas, and Florida Bay by increasing flows through the system toward historical levels. The projects also help the urban and agricultural area in two ways; 1) they permit the lowering of water levels prior to a hurricane and provide significantly greater conveyance during a hurricane, thus decreasing the probability of flooding; and 2) they provide a structural interface between the natural and developed systems, thus permitting water levels to be managed separately for the benefit of both. The Task Force recommends:
- a. The County Commission should request that the Corps and District complete the Modified Water Deliveries and C-111 Projects as quickly as possible.

**Update: Modified Water Deliveries and C-111 Projects.**

- Projects under the Modified Water Deliveries are moving forward, and active acquisition of property in the 8.5 Square Mile Area is occurring.
- C-111 is 85% complete. The rest of construction is pending a land swap with Everglades National Park, and Park boundary changes.



8. **Sparrow Emergency Operations.** The U.S. Fish and Wildlife Service has declared an emergency for the Cape Sable Sparrow (the Sparrow), requiring the Corps to change the way the water management system is operated. These changes have the potential to raise water levels in western Miami-Dade County to levels that would put the area in much greater risk of damaging floods. The Corps has implemented an "Interim Structural and Operational Plan" for the year 2000 (ISOP). This significantly modified the operations in southern Miami-Dade County. To further comply with the emergency in the years 2001 and 2002, the Corps is preparing a plan to implement the "Interim Operational Plan" (IOP) until the Modified Water Deliveries Project is constructed. Like the ISOP, the IOP will further modify water management operations in southwest Miami-Dade. The Task Force recommends:

- a. The County Commission should recommend to the Corps that any operations related to protecting the Sparrow and its habitat that would result in L31-N canal water levels similar to those maintained during the wet season of 1999 should be avoided and that in addition to environmental objectives, flood protection to areas east of the ENP must be an integral part of any interim operating plan.
- b. The County should play an active role in the formulation of the IOP to ensure that the plan being formulated to protect the Sparrow and its habitat prior to the completion of the Modified Water Deliveries Project, does not unnecessarily affect the residents of Miami-Dade County.
- c. The County should work with the Corps and the District to ensure that more flexible flood control operational criteria are incorporated in the ISOP and IOP. The criteria should stipulate the involvement of the Corps Jacksonville District Engineer and the District Executive Director along with their respective operations managers, when a serious flooding threat to the region requires decisions which also have the potential to cause serious environmental impacts.

**Update: Sparrow Emergency Operations.**

- Comprehensive Environmental Impact Statement is complete, therefore current IOP supercedes sparrow emergency operations.
  - The County has recommended 6' elevations for L-31-N.
  - County staff are participating in CSOP criteria development, as members of the CSOP Advisory Team and Project Development Team.
9. **Increase Flood Protection in the CERP.** Within the context of its other project purposes the Corps' Comprehensive Everglades Restoration Plan (CERP) has the potential to maintain or enhance flood protection. The Chief of Engineers, in his June 22, 1999 Report to Congress, stated that flood protection would be maintained to "the extent practicable." Until the Chief

of Engineers issued his report flood protection was to be improved throughout the system where possible, but in no case reduced below existing levels. The Chief's report said that, "Such assurance will not, to the extent practicable, impact other existing legal users and flood protection." Miami-Dade County will pay for significant portion of Everglades restoration and should expect along with ecological and water supply benefits, better flood protection where possible. The Task Force recommends:

- a. The Miami-Dade County Commission should request that Congress include language in the bill that approves the CERP, a firm commitment to seek to improve local flood control within the context of the ecosystem restoration and water supply enhancements of the CERP.

**Update: Increase Flood Protection in the Comprehensive Everglades Restoration Plan (CERP).**

- The Federal bill that approved the CERP has stated that flood protection "should be maintained at its current level".
10. **8 ½ Square Mile Area.** The residents of the 8 ½ Square Mile Area (SMA) have endured flooding because of the eleven (11) year delay in implementing the Modified Water Deliveries project. There are several ongoing National Environmental Protection Act (NEPA) processes which determine the final disposition of the 8 ½ SMA. The Task Force recommends:
    - a. Once the final disposition of the 8 ½ SMA is determined, the County should, if necessary, begin the planning to ensure roads and drainage systems compatible with the chosen project.
    - b. Work with the residents of the area to establish a special taxing district within the 8 ½ SMA to defray costs of internal drainage and other services.
    - c. Immediately take steps to ensure access and egress for residents during hurricane conditions.
    - d. As an interim measure, the County should seek permission from the District to connect the roadside ditch along S.W. 168<sup>th</sup> Street, south of the 8 ½ SMA into the L31-N. The permitting process will include addressing environmental concerns with the runoff.
    - e. The Task Force heard conflicting testimony regarding allegations of discrimination during the post-storm emergency with respect to government assistance in obtaining flood relief for the 8 ½ SMA. The Task Force recommends that the County Commission should refer the issue of alleged discrimination against the 8 ½ SMA residents to an appropriate review body.

**Update: 8 ½ Square Mile Area (SMA).**

- Information about special taxing districts was forwarded to residents' representatives.
- The District's Board of Governors approved Alternative 6d as a final resolution. This provides limited flood protection for residents, combined with buy-outs of certain properties.
- The Miami-Dade County Office of Emergency Management (OEM) has updated the evacuation plan for Miami-Dade County. Depending on the type of event, a mandatory evacuation of the 8½ SMA will be issued, upon declaration of an emergency by the Mayor or his designee, for such events as hurricanes, major flood events, or other emergencies. Under the new plan 8½ SMA will also be included with coastal communities as a first stage mandatory evacuation area.
- The District has indicated that a positive drainage discharge for an existing drainage ditch along SW 168 Street, near the connection to the L-31N Canal, will not be constructed. The implementation of the 8½ SMA Mitigation Plan by the Corps is expected to eliminate the need for this drainage improvement.
- Staff from the County's Public Works Department have met with residents of the 8½ SMA to discuss options for road improvements in the area.

11. **Municipal Improvement Initiatives.** The Task Force recommends that the municipalities should continue to seek assistance from appropriate agencies for the construction of capital drainage improvements, which may include the installation of pumping systems. The municipalities should work within the framework of the regional system, and their solutions must be considered in the context of the regional system by the permitting agencies. The success of local solutions is often dependent on establishing improved conditions in the primary canal system. In order for this to work, all communities must coordinate their drainage activities with the County and the District to ensure that the regional system functions efficiently. Water quality must be an integral component of this planning.

**Update: Municipal Improvement Initiatives.**

- DERM serves as the drainage permit review agency for all regional development, and protocol exists where all municipal projects and permitting activities are forwarded to the County for review.
12. **Cut and Fill Criteria.** The Task Force recommends that Miami-Dade County should evaluate the need for extending the fill restrictions (Miami-Dade County Fill Encroachment and Water Management Criteria, [Cut and Fill Criteria], refer to Appendix F), to other areas in southwest Miami-Dade County, beyond the present limits of the original boundaries of Area B.

Study and implement, if necessary, new cut and fill criteria for new development. This may include higher house pad and road elevations and greater on-site stormwater retention. Miami-Dade County should review and upgrade the criteria for development in areas of the County that are known to be flood prone. This evaluation should be done in all flood prone areas of the County regardless of how they are currently mapped or zoned.

**Update: Cut and Fill Criteria.**

- As discussed in Item Number 5 above, the County is in the process of generating a countywide Stormwater Management Master Plan. This Plan will more specifically evaluate the extent of the Cut and Fill Criteria policies throughout Miami-Dade County.

13. **FEMA Insurance Maps.** The Task Force recommends that Miami-Dade County should request that the Federal Emergency Management Agency (FEMA) update their insurance rate maps Countywide. This is based on the fact that there has been extensive land development since the last update in 1994 by FEMA. The results of this process should be compared to the existing County Flood Criteria maps so that the more stringent elevation is used. Miami-Dade County should also work with FEMA to identify willing sellers in flood-prone areas and purchase those properties under existing federal buy-out programs.

**Update: Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM).**

- FEMA had originally committed to a flood insurance re-study for the entire area of Miami-Dade County. FEMA has reviewed data from the County's Stormwater Management Master Plan, and will use this data as the standard for the new FIRM's. Drainage basins not studied to date will be studied using the same criteria.
  - The County has forwarded elevation and modeling data to FEMA's contractor for 85% of the drainage basins located within the County.
  - The County, District and FEMA have formed a technical partnership to refine and expedite the creation of new FIRM's as part of the above re-study.
14. **Operation of S-197.** S-197 is the structure at the southern end of the C-111 canal. It is the final outlet for the largest drainage area in the County and, coupled with the C-111 overbank flow down stream of the S-18C water control structure, is an important feature of the flood control system that currently serves the agricultural and residential areas east and west of Krome Avenue, from Tamiami Trail to Florida City during severe storm events. Unfortunately, the structure itself is cumbersome to operate. Three culverts are opened and closed manually, and the other ten can only be operated by heavy equipment that must be transported to the site. Complicating the matter is that, to be effective, the culverts must be

closed and opened in response to changing tides during a major event to not only permit the release of excess flood waters, but, in reverse, prevent tidal actions from compounding upstream flooding. As is typical for the current configuration, during Irene this inflexibility limited the effectiveness of S-197. None of the gates could be opened and closed in response to the tide. In this regard, it is important to note that tropical storm tidal surge in the low-lying areas of C-111 will at times negate any overflow and S-197 discharge capabilities. The Task Force therefore recommends:

- a. The District and Corps should investigate options for improving the operational flexibility of the S-197 structure to improve its performance during flood events. This investigation should include potential impacts to Barnes Sound.

**Update:        Operation of S-197**

- 8 of the 13 culverts have been modified with gearboxes and stem lift operators. The remaining 5 culverts have not been modified. This will allow a quicker and more flexible operational response, immediately before and after rainfall events, to both open and close gates to mitigate impacts to Barnes Sound, an estuary located in far south Dade, and high water conditions in the C-111 basin.
  - A spreader canal in this area is being evaluated, which will result in removal of S-197 and backfilling of C-111.
15. **Florida City and North Canals.** These two canals provide important flood protection to a significant amount of agricultural and urban property near Homestead and Florida City. Although the County holds a flowage easement over the canal itself, no maintenance work is done because the County does not own the adjacent right-of-way. The lack of maintenance creates an unacceptable risk to people and property in the area. The Task Force recommends:
- a. The County should evaluate the requirements for maintaining these canals. The evaluation should involve discussions with the adjacent property owners that now own the canal rights-of-way, to see under what conditions the ownership could be reconciled and canal maintenance provided.

**Update:        Florida City and North Canals.**

- The County met with Homestead, Florida City, and the District to discuss maintenance issues and responsibilities.
- Miami-Dade County has performed a maintenance dredge of both canals using state and FEMA appropriations. The local match was cost shared between the County and affected cities through coordination of staging areas during the dredging activity.

16. **Identify Flood Prone Areas in the Unincorporated County.** There are a number of low-lying areas of unincorporated Miami-Dade County which were flooded during Hurricane Irene. The Task Force recommends:

- a. These areas need to be evaluated and the County should implement programs to improve flood protection in these areas.

**Update: Identify Flood-prone Areas in the Unincorporated County.**

- Through DERM's Stormwater Utility, a tracking system is in place to identify flood-prone areas, and capital improvement projects are planned that will address these areas.
  - The Quality Neighborhood Improvement Program (QNIP) addresses local flooding conditions as reported by County residents in flood-prone areas. The General Obligation Bond Program, approved by County residents in November 2004, will provide further funding to address these needs.
  - The County has contracted with a topographical services company, which is providing the elevations needed to enhance evaluation of the identified flood-prone areas.
17. **Seepage Management.** Preliminary calculations indicate easterly seepage in flows to urban and agricultural areas across the L-33, L-30 and L-31 North levees. This seepage may contribute significantly to flooding during severe storms. The Task Force recommends:
- a. CERP plans for seepage management along the eastern edge of the Water Conservation Areas and Everglades National Park should consider flooding impacts to urban and agricultural areas.

**Update: Seepage Management.**

- The Corps has conducted a conceptual study under CERP, including modeling, and has included potential impacts to urban and agricultural areas. The study will be among the first pilot studies conducted. The CERP and Water Preserve Feasibility Study will also discuss this issue.
  - Efforts are continuing to determine the authority for implementation of this project. This project was not an authorized project under CERP.
18. **FEC-Borrow Canal.** Drainage for the Village of Virginia Gardens is dependent upon adequate maintenance of the canal on its western boundary. The Village has indicated that the canal has been blocked by aquatic vegetation, which adversely impacts the drainage of the canal. The Task Force recommends:

- a. Maintenance of this canal is increased to eliminate any blockage, and that the County evaluate the method to determine whether connection to the C-6 canal is adequate.

**Update:       FEC/Borrow Canal.**

- DERM has placed a staff gauge in the Canal so that the Village of Virginia Gardens can monitor the Canal elevation.
- The County is in the process of replacing the culvert connection between the FEC Borrow Canal and the Miami River Canal.
- Through established flow rights in the FEC Borrow Canal, the County has committed to performing a maintenance dredge of this canal. The County and District have applied for state appropriations for this work, and have received partial funding. The General Obligation Bond will provide the remaining funds necessary.

**Flood of October 3<sup>rd</sup>, 2000 Recommendations Progress to Date**

**WCA-3B Seepage Barrier.** This project was originally considered by the Corps of Engineers as a Critical Project in the Everglades Restoration Program and is contained in the Report approved by Congress last fall. The project consists of constructing a below ground seepage barrier below the L-30 levee between the S-334 and S-335 water control structures. This is just west of the intersection of Krome Avenue and US 41. Previous studies have shown this section of levee to have the highest rate of seepage from the Everglades into the south Miami-Dade canal system. A barrier here would help keep Everglades water in the Everglades and eliminates a source of unwanted flow into the L-31 N Canal. The project would also provide the opportunity to test one of the key technologies recommended in the Comprehensive Everglades Restoration Plan. The Task Force recommends an expedited evaluation and implementation of this project by the US Army Corps of Engineers and the South Florida Water Management District. The County should explore the possibility of becoming a Co-Local sponsor of this project with the SFWMD.

**Update:       WCA-3B Seepage Barrier**

- Project is currently under consideration by Corps and District.
- County has sent correspondence in support of project.

**Temporary Lake Belt Reservoir** The Task Force received a presentation from Paul Larsen, a member of the Task Force, on the possibility of constructing temporary flood storage impoundments on private property in the Lake Belt area. Several of the many companies who own the land have expressed a willingness to allow use of their property to temporarily store floodwater during major storm events. This could allow the installation of temporary pumps and small-scale levees to permit floodwater to be pumped to the west and held for a few days

until flooding to the east had receded sufficiently to accommodate the flow from the west. Because of the presence of the County's Northwest Wellfield, water quality review is essential. This concept has the potential to provide significant benefits to the communities affected by the slow recession rates of the western reaches of the Miami and Tamiami Canals. If the concept can be applied in a way that is compatible with wellfield protection and other water quality concerns, it could be the most effective near-term strategy for reducing flood damage in some of the most susceptible areas.

**Update: Temporary Lake Belt Reservoir**

As stated in Item Number 4 above, this project is being funded and constructed through federal disaster money. Phase I is complete, the earthwork in Phase II is complete, and one pump station is expected to be complete in January 2005. This will result in an expected project completion date of January 2005. Interim operating criteria has been drafted and is awaiting comments.

**Ownership and Management of the Secondary Canal System.** The Task Force discussed the need to integrate the operation and maintenance of the primary and secondary canal systems: the SFWMD and Miami-Dade County should evaluate the feasibility and advisability of combining oversight of the operation and maintenance of the primary and secondary under the auspices of the SFWMD. The evaluation should include an assessment of the entire canal system to specify the primary, secondary and tertiary systems; to identify conflicts due to diverse ownership; and make recommendations for resolving conflicts. This effort should culminate in a joint, comprehensive report, including appropriate recommendations, submitted to the governing bodies of each agency by January 1, 2002.

**Update: Ownership and Management of the Secondary Canal System**

- County and District staff formed a One Canal Authority Committee to review feasibility of creating one canal authority. After a series of meetings, a report on the Committee's findings was submitted to the Task Force in 2002.

**FEC Borrow Canal** Recommendation Number 18 from the May 16, 2000 report of the Task Force identified problems with the FEC Canal. The effort to ensure proper maintenance of the FEC Canal has not progressed sufficiently. The Task Force recommends that DERM take all necessary actions to ensure compliance by FEC, including enforcement if necessary. A report by DERM with regard to progress on this issue should be submitted to the County Manager each month until the problems are resolved.

**Update: FEC/Borrow Canal**

- Status described in Item Number 18 above.